MYCOTAXON
ISSN (print) 0093-4666 (online) 2154-8889 Mycotaxon, Ltd. ©2017

July–September 2017—Volume 132, pp. 485–493
https://doi.org/10.5248/132.485

Distoceratosporella digitiformis gen. & sp. nov. from Brazil, *Alcornia sessilispora* gen. & comb. nov., and three new *Distoceratosporella* combinations

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Abstract—*Alcornia* is proposed as a new monotypic genus differentiated from *Parapericonia* by its tretic conidiogenous cells and rhexolytic conidial secession; a new combination *Alcornia sessilispora* is also proposed, based on *P. sessilispora*. *Distoceratosporella digitiformis* is proposed as a new genus and species distinguished from *Ceratosporella* by its distoseptate conidia. These taxa are described and illustrated. Additionally, the new combinations *Distoceratosporella amazonica*, *D. hernandezii*, and *D. longiramosa* are proposed, all with *Ceratosporella* basionyms.

Key words—*Ascomycota,* conidial fungi, hyphomycetes, taxonomy, tropics

Introduction

The diversity of conidial fungi in the Brazilian semiarid region has received little attention. During a survey of hyphomycetes associated with plant materials from Bahia state, two conspicuous fungi were collected. One fungus showed remarkable differences from all previously described genera (Seifert et al. 2011), and the second, although an identifiable species, differed significantly from all other species of the genus in which it had originally been described. The two species are proposed here as the types of two new genera, *Alcornia* and *Distoceratosporella*.

Materials & methods

Samples of leaf litter and decaying fruits were collected in Abaíra and Serra do Ramalho, Bahia state, Brazil. The samples were placed in paper bags for transport to the laboratory, where they were placed in Petri dish moist chambers and stored at 25°C for 30 days in a 170 L polystyrene box with 200 mL sterile water plus 2 mL glycerol (Castañeda-Ruiz et al. 2016). Mounts were prepared in PVL (polyvinyl alcohol and lactic acid) and measurements were made at a ×1000 magnification. Micrographs were obtained with an Olympus BX51 microscope equipped with bright field and Nomarski interference optics. The specimens, including the holotype, are deposited in the Herbarium of Universidade Estadual de Feira de Santana, Bahia, Brazil (HUEFS).

Taxonomy

Alcornia J.S. Monteiro, S.M. Leão, Gusmão, P.M. Kirk & R.F. Castañeda, **gen. nov.**

Index Fungorum IF 553580

Differs from *Parapericonia* by its tretic conidial ontogeny and rhexolytic conidial secession

Type species: *Parapericonia sessilispora* Alcorn & P.M. Kirk [≡ *Alcornia sessilispora* (Alcorn & P.M. Kirk) J.S. Monteiro et al.]

Etymology: Latin, *Alcornia*, named in honor to John L. Alcorn, an Australian mycologist for his contribution to the study of fungal diversity.

Conidiomata on the natural substratum sporodochial, punctiform, scattered; brown, dark brown, or black. Conidiophores macronematous, mononematous, erect, unbranched or slightly branched, cylindrical, with a distinct constriction near the base, flexuous, sub-coiled, undulated, septate, verruculose, pale brown or brown. Conidiogenous cells polytretic, integrated cylindrical, determinate, intercalary, rarely terminal, brown. Conidial secession rhexolytic. Conidia solitary, pleurogenous, globose, unicellular, verruculose or verrucose with a basal frill, dark brown to dark reddish-brown.

Alcornia sessilispora (Alcorn & P.M. Kirk) J.S. Monteiro, S.M. Leão, Gusmão, P.M. Kirk & R.F. Castañeda, **comb. nov.** Fig. 1

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≡ *Parapericonia sessilispora* Alcorn & P.M. Kirk, *Trans. Br. Mycol. Soc.* 85(3): 561 (1985).

Conidiomata on the natural substratum rudimentary sporodochial, punctiform, scattered; brown, dark brown or black. Mycelium mostly superficial, composed of septate, verruculose, somewhat leprous, brown

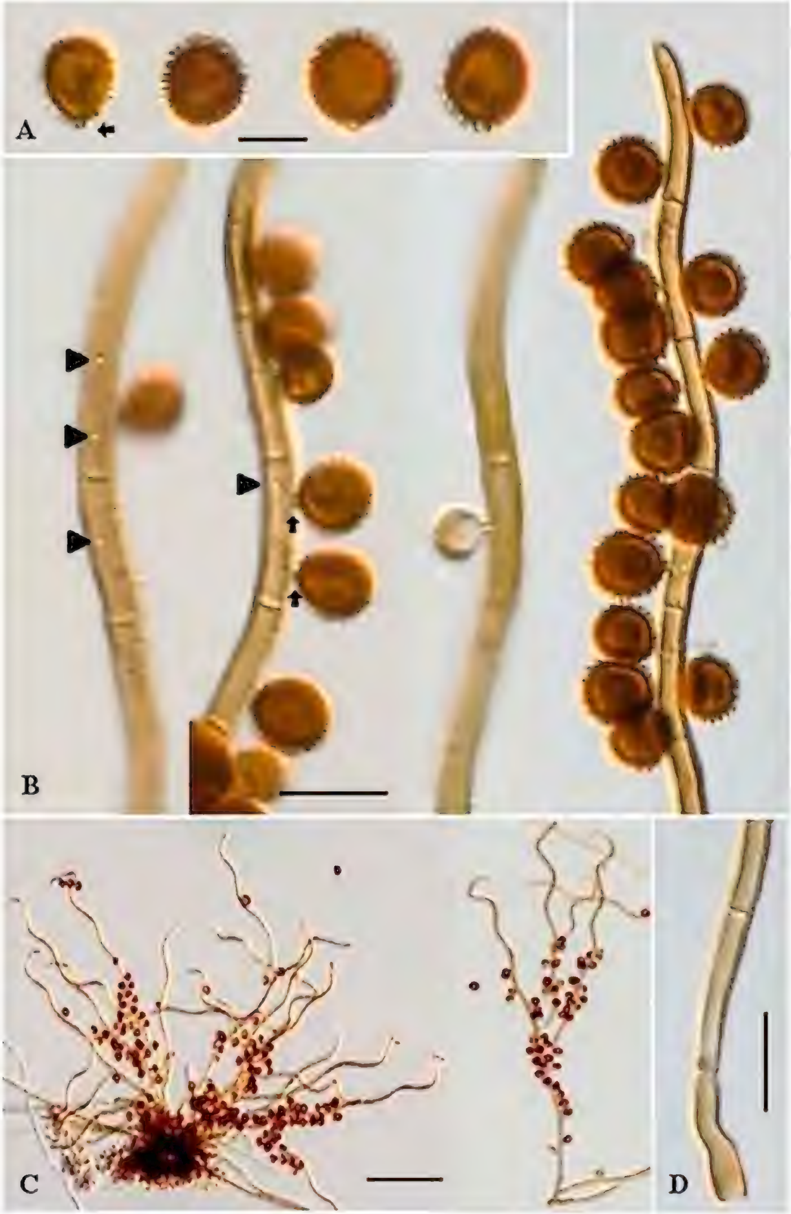

Fig. 1. *Alcornia sessilispora* (HUEFS 210449). A. Conidia with small peg (arrow). B. Detail of conidiogenous cells with pores (arrows head) and conidia with small peg (arrow). C. General aspect of conidiophores. D. Detail of basal cell of conidiophore. Scale bars: A = 5 µm; B, D = 10 µm; C = 50 µm.

hyphae, 2–4 µm diam. Conidiophores macronematous, mononematous, arising in fascicles from the conidiomata, erect, unbranched or slightly branched above, flexuous, sub-coiled, undulating toward the apex and distinctly constricted near the base, 8–14-septate, verruculose, pale brown to mid brown, <500 µm long, 5–6 µm wide, proximal part below the constriction 7–25 µm long. Conidiogenous cells polytretic, integrated, verruculose, cylindrical, determinate, intercalary, rare terminal, brown, 11–20 × 2.5–3.5 µm. Conidial secession rhexolytic. Conidia solitary, pleurogenous, globose, unicellular, verruculose or verrucose, 5–7 µm diam, dark brown to dark reddish-brown, with a pale brown, 1–1.5 µm long basal frill.

Specimen examined: **BRAZIL. Bahia**, Serra do Ramalho, on decaying fruit of unidentified plant, 13°32′S 43°47′W, alt. 450–600 m, 16 March 2008; coll. S.M. Leão-Ferreira (HUEFS 210449).

Comments: *Parapericonia* M.B. Ellis, typified by *P. angusii* M.B. Ellis, is characterized by pulvinate, punctiform sporodochial conidiomata arising from superficial and immersed stromata. The conidiophores are macronematous, mononematous, unbranched or branched, straight or flexuous, uncinate at the apex, constricted near the base, pale to mid brown, verruculose toward the apex. The conidiogenous cells are monoblastic or polyblastic, turbinate or clavate, discrete, laterally developed on the conidiophores and branches, solitary or short moniliform and produce solitary or blastocatenate, spherical, unicellular conidia verruculose, dark brown that seceding schizolytically (Ellis 1976). *Sporotretophora* Whitton et al. resembles *Alcornia* in its conidiophore arrangement, enteroblastic tretic conidiogenesis, and unicelled conidia; but *Sporotretophora* has monotretic conidiogenous cells and schizolytic secession of conidia (Whitton et al. 2012).

The conidiomata in *Alcornia* are considered rudimentarily sporodochial but lacking immersed or superficial stromata and with the conidiophores arising more or less in a radial fascicle from a tuft formed by branched and anastomosing hyphae. Its conidiogenous cells are polytretic, integrated, intercalary, and the conidia attach to the conidiogenous loci by a diminutive peg, 1–1.5 µm long that remains attached to the conidia after rhexolytic conidial secession. The three important diagnostic characters separating *Alcornia* from *Parapericonia* include: a) integrated (not moniliform) conidiogenous cells, b) tretic conidiogenous cells, and c) rhexolytic conidial secession (Alcorn & Kirk 1985). These differences support a new genus and new combination for *Parapericonia sessilispora*.

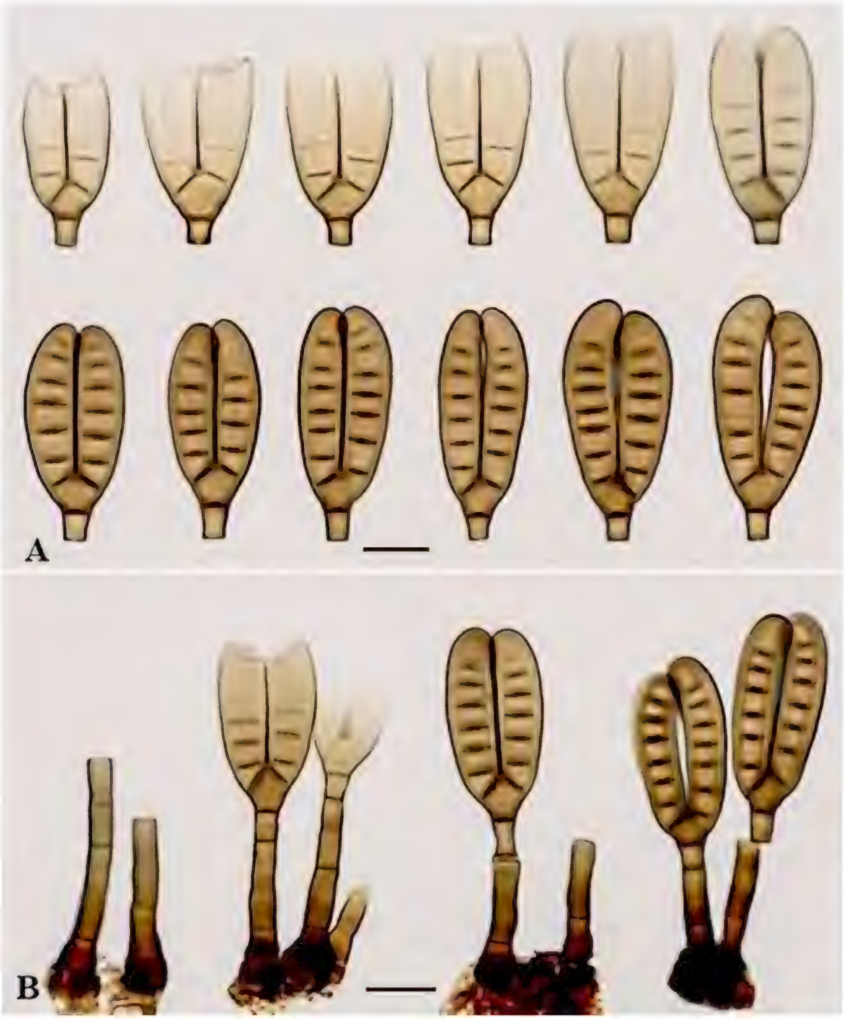

Fig. 2. *Distoceratosporella digitiformis* (holotype, HUEFS 216663). A. Conidia. B. Conidiophores, conidiogenous cells, and conidia. Scale bars = 10 µm.

Distoceratosporella J.S. Monteiro, Gusmão & R.F. Castañeda, gen. nov.

IndexFungorum IF553582

Differs from *Ceratosporella* by its distoseptate conidia.

Type species: *Distoceratosporella digitiformis* J.S. Monteiro et al.

Etymology: Latin, *disto-*, referring to the type of septa, + *-ceratosporella* referring to the genus *Ceratosporella*.

Conidial fungi. COLONIES on the natural substratum effuse; brown, dark brown, or black. CONIDIOPHORES macronematous, mononematous, erect, unbranched, septate, brown or black. CONIDIOGENOUS CELLS monoblastic, cylindrical, integrated, with enteroblastic, percurrent extensions, brown. Conidial secession schizolytic. CONIDIA solitary, acrogenous, stauroconidium or cheiroid, with 2 or more distoseptate rows of cells, pale brown to dark brown, smooth or verrucose.

Distoceratosporella digitiformis J.S. Monteiro, Gusmão, & R.F. Castañeda, **sp. nov.** FIGS 2, 3C

INDEX FUNGORUM IF 553583

Differs from *Ceratosporella bicornis* and all other *Ceratosporella* spp. by its distoseptate, digitiform conidia.

TYPE: **BRAZIL**. **BAHIA**: Abaíra, Mata da Tijuquinha (Catolés), on decaying leaves of unidentified plant, 13°13′S 41°37′W, 9 January 2015, coll. J.S. Monteiro (**Holotype**: HUEFS 216663).

ETYMOLOGY: Latin, *digitiformis*, meaning finger-like, referring to the two rows of cells in the conidia.

COLONIES on the natural substratum effuse, hairy, dark brown. Mycelium mostly superficial, composed of branched, smooth, brown hyphae, 2–3 µm diam. CONIDIOPHORES macronematous, mononematous erect, straight, unbranched, 1–4-septate, 20–40 × 3–4 µm, brown to dark brown at the base, pale brown toward the apex, smooth. CONIDIOGENOUS CELLS monoblastic, cylindrical or doliiform, integrated, indeterminate with 1–3 enteroblastic percurrent extensions, pale brown, smooth, 4–15 × 3.5–4 µm. Conidial secession schizolytic. CONIDIA acrogenous, solitary, 32–43 × 12–16 µm, digitiform, with a doliiform or very short cylindrical basal cell, 4–6 × 3–4 µm, brown, smooth, composed of two parallel, cylindrical, brown, 4–8-distoseptate, smooth row of cells, 18–32 × 6–8 µm.

COMMENTS: *Ceratosporella* Höhn., typified by *Triposporium bicorne* Morgan [≡ *C. bicornis* (Morgan) Höhn.] (FIG. 3A), is distinguished by macronematous, mononematous, unbranched conidiophores and monoblastic, cylindrical or doliiform, terminal, integrated conidiogenous cells with one or several enteroblastic percurrent extensions. The conidia are solitary, acrogenous, stauroconidia or cheiroid, euseptate, brown. The remaining 13 *Ceratosporella* species have euseptate conidia, agreeing with the generic concept provided by Höhnel (1923) and treated by Castañeda-Ruiz et al. (1996), Kuthubutheen & Nawawi (1991), Monteiro & Gusmão (2014). *Distoceratosporella* closely

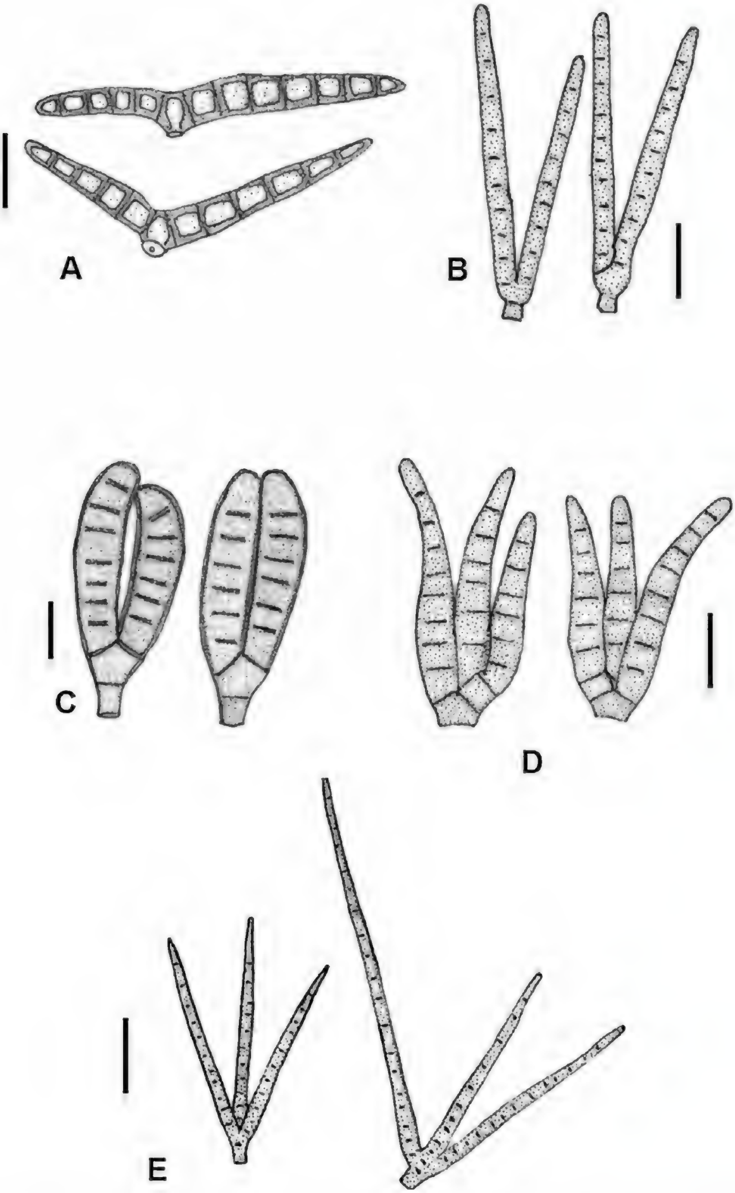

Fig. 3. *Ceratosporella* and *Distoceratosporella* species: conidia of type specimens. A. *Ceratosporella bicornis* (Hughes 1951); B. *Distoceratosporella amazonica* (Monteiro & Gusmão 2014); C. *Distoceratosporella digitiformis* (this paper); D. *Distoceratosporella hernandezii* (Monteiro & Gusmão 2014); E. *Distoceratosporella longiramosa* (Castañeda-Ruiz 1988). Scale bars: A, B, D, E = 20 µm; C = 10 µm.

resembles *Ceratosporella* but can be separated by its distoseptate conidia. Similar criteria have been used to separate other generic pairs, such as *Corynespora* Güssow and *Solicorynespora* R.F. Castañeda & W.B. Kendr., *Sporidesmiella* P.M. Kirk and *Sporidesmium* Link, *Ellisembia* Subram. and *Sporidesmium*, and *Minimelanolocus* R.F. Castañeda & Heredia and *Pseudospiropes* M.B. Ellis (Castañeda-Ruiz & Kendrick 1990, Kirk 1982, Subramanian 1992, Castañeda-Ruiz et al. 2001).

New combinations for three *Ceratosporella* species are proposed in *Distoceratosporella*, based on their distoseptate conidia:

Distoceratosporella amazonica (J.S. Monteiro & Gusmão) J.S. Monteiro, Gusmão & R.F. Castañeda, **comb. nov.** FIG. 3B

INDEX FUNGORUM IF 553584

≡ *Ceratosporella amazonica* J.S. Monteiro & Gusmão, Nova Hedwigia 98: 483 (2014).

Distoceratosporella hernandezii (J.S. Monteiro & Gusmão) J.S. Monteiro, Gusmão & R.F. Castañeda, **comb. nov.** FIG. 3D

INDEX FUNGORUM IF 553585

≡ *Ceratosporella hernandezii* J.S. Monteiro & Gusmão, Nova Hedwigia 98: 483 (2014).

Distoceratosporella longiramosa (R.F. Castañeda) R.F. Castañeda, J.S. Monteiro & Gusmão, **comb. nov.** FIG. 3E

INDEX FUNGORUM IF 553586

≡ *Ceratosporella longiramosa* R.F. Castañeda, Fungi Cubenses III: 2 (1988).

≡ *Actinocladium longiramosum* (R.F. Castañeda) R.F Castañeda, Mycotaxon 60: 278 (1996).

Acknowledgments

We are indebted to Dr. Jian Ma and Dr. De-Wei Li for critical review. The authors thank the National Council for Scientific and Technological Development (CNPq) (Proc. 451991/2016-8; 303062/2014-2; 154329/2016-9). RFCR is grateful to OSDE, Grupo Agrícola from Cuban Ministry of Agriculture and Programa de Salud Animal y Vegetal (project P131LH003033). Dr. Lorelei L. Norvell's editorial review and Dr. Shaun Pennycook's nomenclature review are greatly appreciated.

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